INDEX TO SURGICAL PROGRESS.

GENERAL SURGERY.

I. Observations and Experiments on the Principles of Asepsis. By Dr. Georg Gottstein (Breslau). This painstaking memoir, with its maze of statistics and its superfluity of logic, reduces itself to these statements.

The bacteriological control of the sterilized hand prior to operation tends to establish the relation of the healing of wounds to the disinfection of hands, and is superior to theoretical experiments.

In spite of the individual features of any modus in more than 57 per cent. of cases the hands were infected.

The individual susceptibilities have to be considered in the cleansing of hands, since some hands are easier cleansed than others, *e.g.*, operator, assistant, and nurse, in this order.

The occupation of the various hands in the interim of the operations influences the ease and degree of disinfection: it is easier, furthermore, to remove accidental germs from the hands than the normal epiphytes.

The apparent absolute sterilization with varying percentages of alcohol is delusory, since subsequent ablutions with sterilized water raise the percentage from 14 per cent. to 50 per cent.

At this stage, the author, finding himself in the position that in but 50 per cent. of the cases the hands can be sterilized according to Furbringer's method or modifications thereof, passes on to the experiments with cotton and rubber gloves.

Of sterilized cotton gloves he says, if the finger be artificially infected (control experiment) and subsequently disinfected, no germs pass through the meshes; but if the gloves be moist, germs

will pass through; yet their number is far less than if the bare hands be used. Thus, at the end of operations the bare hand showed infection in 86 per cent., the gloved hand in 73 per cent.

As cotton gloves become the depot for germs, they have to be changed often during operations.

When it comes to the use of rubber gloves, the author offers no plausible reasons for the presence of germs on their surface in as large a number as are under the cotton gloves.

In conclusion, the author looks to an ideal impermeable rubber glove having the same agreeable features as the Tricot glove. —*Beiträge zur klinischen Chirurgie*, Band xxv, Heft 2.

MARTIN W. WARE (New York).

II. Some of the Conditions on which an Objective Cure of Epilepsy depends. By PROFESSOR KOCHER (Berne). The surgical treatment of epilepsy is to-day in disrepute. Formerly, statistics of 60 to 70 per cent. cures were alleged, but a recent search of cases that have remained definitely cured shows only 2 to 4 per cent. of such to exist. Graf's collection of 1898 contained only eight positive cures.

The greatest improvement in recent years would appear to be the method of von Bergmann of excision of the cortical surface from which the abnormality seems to arise. Since 1880, Kocher's operations have been along the line of a personal theory, which has yielded him eight positive cures.

In the first place, observations have confirmed the line of treatment that is directed principally to the removal of the exciting cause,—removal of pressure, relief of adhesions, evacuation of abscesses,—68 per cent. cures.

The results in cases involving incision of the dura and removal of bony fragments, or of cicatrices impinging on the brain, are still better, 88.8 per cent. and 85.7 cures. The removal of cysts is less successful, 4.78 cures.

If we accept the influence of fragments of bone, cysts, and cicatrices as causes of epilepsy, in that their alleviation results in

a cure, we also find by comparison of two further classes of operations, that there exists another and equally plausible origin of epileptic seizures, which is not generally recognized, that is, local or general increase of intracranial pressure.

If we compare results of trephining, in which none of the above-mentioned conditions was found, with or without incision or excision of the dura, we get the following results:

Dura not opened, only 14.2 per cent. cures, while with opening of the dura, 54.7 per cent. cures. Therefore opening of the dura has a curative effect, *per se*, which needs to be analyzed. And it is most probable that it is to this very opening of the dura that cortical excision owes its good results. Support of this belief may be found in the fact that, while removal of an obvious source of irritation is followed by relief immediately or very soon following cortical excision, the convulsions remain relatively very severe, or are sometimes increased.

Trephining with opening of the dura produces a permanent lowering of pressure throughout the whole of the cranium; this result we bring about and intensify by the removal of large portions of the cranial contents, *e.g.*, by drainage. Opening of the dura is essentially the establishing of a valve, whose function it is quickly to equalize variations of pressure.

Careful investigation of the author's own material has demonstrated that the cured cases were those in which a valve was formed, which has become permanent, the covering membrane remaining free and sinking or bulging with the lowering or increase of intracranial pressure; while in the unsuccessful or recurrent cases the communicating aperture is closed, for the greater part or entirely, either by bony deposit or by a cicatricial mass so dense in nature as to render it as unyielding as a true bone formation. The importance of this fact is evident so soon as a comparison is instituted between fracture of the skull with or without loss of substance of bone and dura.

While simple fractures of the skull give rise relatively often

to epilepsy, in eighteen operations for extensive fractures, in only one did epilepsy result; these cases have been watched for an average of seven years.

Scars and adhesions, *per se*, do not necessarily provoke epileptic seizures, except in connection with other factors which are ordinarily termed predisposition. Epilepsy is observed to follow cicatrices resulting from marked inflammatory processes, such as occur in extensive necrosis of tissue or laceration of the brain. Aseptic scars found under a minimum of reaction are not ordinarily followed by epileptic manifestations.

The formation of cysts plays an important part in the production of traumatic epilepsy, as cysts are a necessary end result of cerebral destruction when an external outlet is wanting. Such cysts were present in a large proportion of the operations, and they are an important factor in the consideration of intracranial pressure, local or general.

In all operations, therefore, for the relief of traumatic epilepsy, the operator, in addition to dealing with such direct causative elements, as spicules of bone, cicatrices, and cysts, should bear in mind the influences exerted by variations of intracranial pressure.

Local lowering of pressure may be obtained in addition to a removal of a circumscribed bony area, by incision, and, still better, by excision of the dura. General lowering is accomplished in two ways. Cysts and collections of fluid in the ventricles may be drained, but in order to be successful the treatment must be carried on for months. The simplest method is by the use of a silver drainage-tube. Drainage may also be effected by making large holes in the skull, such as are obtained by osteoplastic resection, by diminishing the size of the bony portion; a gutter is left behind when the flap is replaced.

Finally, it may be laid down as a principle that the now well recognized increased intracranial pressure furnishes an explanation of that unknown quantity which has been called the *status*

epilepticus,—that is, a disposition towards epilepsy which may be due to anatomical changes from congenital conditions, or previous inflammatory changes, or tumors, or, finally, to the traumatism *per se*. This condition is interesting not alone from the point of surgical treatment, but as an incentive to the medical men to make efforts to produce the desirable lowering of pressure by internal therapy. It is possible that in the future prophylaxis of epilepsy it will not infrequently be held that opening of the skull does less damage than does the closing of it.—*Verhandlungen der deutschen Gesellschaft für Chirurgie, XXVIII Kongress.*

CHARLES L. GIBSON (New York).

NECK.

I. Experiences in the Surgical Treatment of Benign Goitres at Mikulicz's Clinic. By DR. E. REINBACH (Breslau). The organotherapy (thymus and thyroid extracts) of goitres having proven failures, the treatment of goitres now remains purely surgical, and the use of organic extracts reserved as a palliative measure to favorably influence subsequent operative procedures. On this account the author offers to fill certain gaps apparent in the otherwise extensive reports from other clinics. Thus a typical operative procedure is practised by Mikulicz for all cases, viz., resection of one or both halves of the thyroid. The steps of this operation as now perfected consist in a Y incision (Kocher), vertical division of the fascia, ligation of the superior thyroid vessels, division of the isthmus, ligation of the inferior thyroid, if desired, and then wedge-shaped resection of the gland; suture of the capsule, and then suture and drainage of the wound. The advantages over extirpation are, the recurrence is avoided, the operation is within strict physiological limits, as all the diseased is removed and enough of the healthy viscus is left to functionate; it therefore replaces enucleation entirely, and is superior to extirpation (Kocher), since the latter aims at total removal of half the goitre, the other half being left in situ whether totally or

partially diseased. Resection is generally bilateral; save where a great discrepancy in the size of the two halves of the goitre exists, it is unilateral.

The material at this clinic differs from that of others, inasmuch as the cases were sporadic, not as huge as the endemic variety, and a relatively large number of substernal (six) and accessory retrovisceral (three) were encountered. These latter are of interest, since they have to be differentiated from glands; this is possible by puncture. Percussion of the sternum to locate the gland behind it is not reliable. One hundred and sixty-two cases were operated with a mortality of four; all of the deaths were due to pneumonia, which accidental cause might follow any operation, therefore the mortality is to be reckoned as *nil*.

Indication is always present to operate if there are pressure symptoms, or if the growth is rapid: for cosmetic reasons operation is an open question; yet in view of no mortality the author favors it. The only contraindications are to be found in those afflicted with any organic disease; every other case ought to be operated upon. Where there were any respiratory or cardiac symptoms, Schleich's solutions, not cocaine, 1 per cent., were used.—*Beiträge zur klinischen Chirurgie*, Band xxv, Heft 2.

MARTIN W. WARE (New York).

II. Implantation of Costal Cartilage in the Larynx for the Cure of Severe Cicatricial Stenosis and Loss of Substance. By F. v. MANGOLDT (Dresden). In very marked cicatricial contractions of the larynx, dilatation is not only sadly ineffectual, but often results only in an aggravation of the condition. In such cases a good result may frequently be obtained through laryngotomy and continuous dilatation; but this method is unavailing in the severest cases, as it means condemning the patient to the permanent wearing of a canula.

The author has devised and successfully carried out the plan of increasing the lumen of the larynx by implantation of a piece of costal cartilage.

The patient was a child in her fifth year, affected with stricture of the larynx, dating back to operation in the first year for papilloma.

The operation consisted in the obtaining of a piece of the eighth costal cartilage of suitable dimensions, with careful preservation of its perichondrium; this was implanted vertically between the skin and subcutaneous tissue in the median line of the neck. Eight weeks later this combined flap was inserted between the alæ of the thyroid cartilage, the cartilage being secured by four points of suture to the hyoid bone above, and also to the alæ of the thyroid, laterally. The cartilage fragment remained attached to the skin, so that the fat tissue of this skin-cartilage flap was directed into the interior of the larynx, remaining to be covered over in the future by extension over it of the ends of laryngeal mucous membrane.

Dilatation now could be easily effected through the pre-existing tracheal fistula. An O'Dwyer tube is now employed, but it can eventually in all probability be dispensed with.

The case as above described is of interest from several points of view.

It furnishes an absolute proof of the feasibility of detaching a piece of costal cartilage, its perichondrium being retained, and incorporating it within the structures of the larynx after a preliminary successful implantation beneath the adjacent skin.

The piece of cartilage is still to be found in its place, one and a half years after implantation, as demonstrated by a radiograph.

Time must still elapse for the determination of the ultimate fate of this transplanted cartilage. Still, even should it not become a permanency, it will still have remained sufficiently long to bring about the desired displacement of the wings of the thyroid cartilage.—*Verhandlungen der deutschen Gesellschaft für Chirurgie, XXVIII Kongress.*

CHARLES L. GIBSON (New York).

CHEST AND ABDOMEN.

I. Heart Wounds and Suture of the Heart. By Dr. C. A. Elsberg (New York). While this series of experiments is conducted upon rabbits, they afford sufficient generalization of those principles which might guide us in the treatment of human heart wounds.

The rabbit can stand wounds of all sizes without immediate peril to life. Needle punctures cause temporary arhythmia. The hæmorrhage is best controlled by digital pressure. Hæmorrhage is freer from the right heart than the left, and more pronounced in systole than diastole.

The second series of experiments elucidate facts concerning sutures of the heart wounds, and the phenomena are in part those of needle punctures. Non-penetrating sutures, *i.e.*, suture of the epicardium and a small layer of muscle, bleed less and are less likely to tear than those embracing much of the muscle, which tears and is apt to rend the endocardium also. Only when the wound is too large should the suture be deep. Furthermore, the suture is to be applied in diastole, since, if it is done in systole, the next diastole will cause the suture to be stretched and tear through the muscle. Three months later nothing abnormal could be detected in the heart's action.

Histological changes show cellular infiltration, degeneration of the muscle fibres, which are not subsequently regenerated, but replaced by connective-tissue cells; at the end of two weeks cicatricial tissue represents the line of wound, and everywhere the suture was surrounded by connective tissue.

In view of the lack of regenerative powers of the heart-muscle fibres, the sutures ought to be as few as possible, interrupted, and only penetrating the endocardium.—*Beiträge zur klinischen Chirurgie*, Band xxv, Heft 2.

II. Abdomen Obstipum (Congenital Shortening of the Rectus Abdominis). By Dr. Habs (Magdeburg). Herein

the author narrates the history and successful operative interference for a most unique condition. An infant born of healthy parents, with no history of any injury during intra-uterine life and a normal delivery, was first seen in the fifth month presenting a stony, hard mass in place of the left rectus muscle. The ensiform process nearly touched the symphysis pubis, the lateral parts of the abdomen bulged out, suggesting enlarged kidneys. A month later malnutrition set in owing to the great diarrhœa and, in addition, prolapse of the rectum. Sternum was funnel-shaped, total kyphosis existed with lumbar gibbous, and the child always lay with the thighs flexed.

The progressive marantic condition due to prolapse occasioned by the diminished abdominal capacity constituted the indication for operation. A total extirpation of the left rectus was decided upon and performed in thirty-two minutes under A. C. E. narcosis. The posterior sheath of the left rectus was not adherent, and the folds in it, owing to the shortening of the muscle, straightened out after its removal. A tenotomy of the right rectus at two levels was still further requisite before complete extension of the body was possible. Immediately all aforesaid deformities disappeared, and the wound healed without any reaction. Six months later none of the deformities reappeared; the child is in robust health, and not at all hampered by the exclusion of the left rectus.

Microscopically, the entire extirpated muscle was represented by a fibrous mass, no muscle fibre being visible. While the author regards the etiology as obscure, he hints at the possibility of a neurotic or inflammatory (syphilitic?) basis for the condition.—*Zeitschrift für orthopædische Chirurgie,* Band vii, Hefte 2 und 3.

III. Experimental Researches upon Plastic Operations with the Omentum. By Dr. Alexander Tietze (Breslau). The application of an omental stump about the line of suture of a hollow viscus (Senn) to guard against leakage, or its arrangement, for the purpose of excluding the peritoneal cavity, to favor

extraperitoneal drainage of the gall-bladder (Langenbeck), or to stop up a gap in a hollow viscus, *e.g.*, ulcer of stomach (Braun and Bennet), all of these constitute "omental plastiquæ."

The author's efforts were mainly directed to the histological details of the aforesaid procedures. In the first set of experiments on dogs, a circular piece of stomach wall was excised and reinserted by suture, thus affording conditions favorable to a threatening perforation. Against this defect omentum was fastened. Result: the resected piece of stomach wall necrosed, and into the gap the omentum was wedged. In two instances the bowel was likewise treated, but here, while omentum was adherent, the gap was bridged over by intestinal wall.

In a second series of experiments, the omentum was applied about the bowel, subjected to an end-to-end anastomosis with deficient sutures (four). Death induced four weeks later finds the bowel united firmly, no adhesions anywhere, and the calibre of the bowel not constricted by adherent omentum. Again, in a third experiment, a defect in a stomach wall was obturated by a stump of omentum, and the post-mortem find eight weeks later was the same as in Series 1.

Histology: Agglutination with the peritoneum, cellular infiltration of the stump, and epidermization of the omentum, and, finally, cicatrization of the omentum which caused a contraction of the bowel lumen; furthermore, in operation on the stomach, the single layer of epithelium covering the omentum proliferated, and subsequently, by virtue of its innate properties, formed tubules.

Conclusions: Such plastic operations are everywhere in place when doubt is entertained as to the security of the line of suture about a hollow viscus.—*Beiträge zur klinischen Chirurgie,* Band xxv, Heft 2.

ORTHOPÆDIC.

I. Fat Embolism following Interferences of an Orthopædic Nature. Dr. Edwin Payr (Graz). Bearing strictly in its relation to orthopædic manipulations, the occurrence of fat embolism will awaken new interest, since it is stated that nearly all the seven cases herein referred to followed some orthopædic manipulation or operation of the knee-joint (Eberth); yet one of the author's cases followed redressement of the ankle-joint. This latter, the first case, was a girl, aged fifteen, bedridden for seven months, afflicted with mitral insufficiency and chronic articular rheumatism. For a redressement of equinovalgus A. C. E. was given. The day following the temperature was subnormal, severe dyspnœa set in, moist râles in both lungs, and hæmoptysis, yet the senses remained clear until shortly before death.

Autopsy: Fat drops in the lung, pulmonary artery, left heart, liver, and kidneys. *Thymus persistens,* vast enlargement of the tonsils, and follicles at the base of the tongue, and large mesenteric glands and intestinal follicles.

In a second instance an operation was performed on an adult, aged thirty-eight, for the drainage of a gunshot wound of the head of the tibia. The next day dyspnœa, rapid pulse, high temperature, delirium, and coma developed.

Autopsy: Nothing in the brain, fat drops in the right lung and kidneys. *Thymus persistens,* lymphatic ring of the pharynx greatly hypertrophied. The last case, a girl of ten years, had a resection of the knee-joint performed; three days later similar symptoms, as in the preceding cases, developed.

Autopsy: Fat in the jugular veins and lungs. *Thymus persistens,* spleen enlarged, Peyer's plaques, enlarged and cheesy mesenteric glands.

Accordingly as the cerebral or respiratory disturbances predominate, the anatomical location of emboli may be foreshadowed.

Hæmoptysis, often accompanying the respiratory form, are due in part to hypostatic congestion of lungs.

The *rôle* played by the "Status Lymphaticus" in causing sudden death from accidents in themselves not mortal (Paltauf); its relation to sudden death during chloroform narcosis (Kundradt), and its influence in lowering resistance to acute illness (Ortner), lends itself admirably in accounting for death, when sudden circulatory disturbances supervene upon the entrance of fat emboli into the lungs, vessels, and brain. Further import may be given to this view because of the occurrence of these cases within one and a half years in a district (Tyrol) where *Thymus persistens* is commonly met with.—*Zeitschrift für orthopædische Chirurgie*, Band vii, Hefte 2 und 3.

II. Laminectomy for Pott's Paraplegia. By DR. F. TRENDELENBURG (Leipzig). The author believes the unfavorable opinions generally held regarding the value of this operation are unwarranted. He has performed this operation eight times in the last four years. The ages of the patients were respectively nine, eleven, fourteen, seventeen, eighteen (three), and thirty-six years. In most cases the carious process was cured, the others were well advanced in healing; in the most recent case the disease had existed two years. In only one patient was the paralysis of recent date, in the others not less than six months, and in one case of seventeen years' duration. The paralysis was for the most part of the spastic type; in one case of epidural abscess there was complete sensory and vesical paralysis; otherwise the cases presented but little if any disturbance of sensation or of the functions of the bladder and rectum. The exciting cause of the paralysis was found to be, abscess 1, cheesy focus in the spinal canal 1, granulation tissue of a peri-pachymeningitis 1, abnormal narrowness of the canal from a kyphosis without other changes, 5 times.

In resecting the laminæ, a curved lateral skin-flap was made. The bone was divided with Luer's forceps, a chisel being used.

Healing by primary union was always obtained. No death occurred as a direct result of operation. One boy died seven months later without giving any evidences of improvement. All the other patients still live.

The result of operation as manifested by an improvement of the paralysis was evident in half of the cases in the first few days or weeks, in the others there was either no change, or, even after very cautious procedures, a change for the worse, probably due to œdema of the spinal cord, and directly after operation a transformation of the spastic into a flaccid paralysis, and vesical disturbances supervened or were exaggerated. This unfavorable state then passed off in a few weeks and improvement gradually took place. A veritable improvement as contrasting with the previous condition was noted from three to nine months later. In only two cases was there no improvement, in the remainder the end result was good. Complete or very nearly complete cure was obtained four times, although in one of these, a case of epidural abscess, there was a temporary remission with development of a new abscess. Two patients are still under treatment, one is already distinctly better.

The author thinks that these results have not been obtained because the improvement of the paralysis might already have been established before interference. Such an improvement is in his experience the exception.

The author thinks that these results have not been obtained, plete or very nearly complete cure of the active process accompanied by paraplegia in which the pressure is pretty clearly due to a small abscess or a cheesy focus, or, what is a more frequent cause than is generally known, to a narrowing of the canal at the point of the greatest bending of the spinal column. That the paralysis (if incomplete) has existed a long time, seventeen years in one case, is no contraindication to operation.—*Verhandlung der deutschen Gesellschaft für Chirurgie, XXVIII Kongress.*

CHARLES L. GIBSON (New York).